REMARKS

Applicant would like to thank the Examiner for the careful and exhaustive consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe the subject matter which applicant regards as the invention.

Prior to this Amendment "F", claims 23-46 and 48-57 were pending in the application. As a result of this Amendment "F", claims 24, 25, 32, 35, 38, 41-43, 47, 50 and 52-54 have been canceled, claims 23, 26-31, 36, 37, 39, 40, 44, 45, 48, 49 and 51 have been amended, and new claims 58-64 have been added. Reconsideration of the present application is hereby requested.

In the Office action, the Examiner objected to claim 54. Since claim 54 has been canceled, this objection is now moot.

Claims 29 and 35 have been rejected under 35 USC §112, first paragraph for defining subject matter that was not sufficiently described in the specification. Claim 35 has been canceled, thereby rendering the Examiner's rejection moot. With regard to claim 29, the Examiner asserts that the specification only discloses fixedly attaching a first part to a second part after positioning the joining element in the bore. Applicant respectfully submits, however, that lines 22-25 on page 12 of the specification provides support for performing the step of fixedly attaching before positioning the joining element in the bore, as was previously recited in claim 29. Nevertheless, claim 29 has been amended to now recite "wherein the step of fixedly attaching is performed after positioning the joining element in the bore".

Claims 26, 28, 29 and 35 have been rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As set forth above, claim

35 has been canceled, thereby also rendering this rejection moot. Claim 29 has been amended as set forth above and claims 26 and 28 have been amended to clarify the claim language and to correct the lack of antecedent basis in these claims, respectively. Applicant submits that as currently amended, claims 26, 28 and 29 meet the requirements of 35 USC §112, second paragraph.

Claims 49, 50, 52, 55 and 57 stand rejected under 35 USC § 102(e) as being anticipated by U.S. Patent No. 5,785,476 to McDonnell, which discloses a fastener having a soft tip. The McDonnell patent discloses the fastener as having a conical portion 2 that is ostensibly formed of PVC. The conical portion 2 may end at a pointed tip, or alternately, a pointed metal tip 3 can be secured to the end of the conical portion 2. The McDonnell patent fails to disclose what the remainder (i.e., the head and the front end 4) of the fastener is composed of.

In rejecting claim 49, the Examiner states that "at least part of the remainder of the body being from a different material than said thermoplastic material (the rest of the fastener is of a harder material; i.e., a standard nail or screw)". As set forth above, however, the McDonnell patent fails to disclose what the remainder of the fastener is composed of. There is no mention in the McDonnell patent that the remainder of the fastener is composed of a harder material. The Examiner expressly acknowledges this fact in points 26 and 27 of her Office action with regard to claims 52 and 53. With regard to the term "standard", this term is only used in the McDonnell patent to describe the size of the fastener and not its composition, e.g., "standard ***size*** fastener", Thus, the McDonnell patent fails to disclose "at least part of the remainder of the body being from a different plastic material than said thermoplastic", as is presently recited in amended independent claim 49. For at least

this reason, the McDonnell patent fails to show or suggest amended independent claim 49.

In addition to the foregoing, the McDonnell patent fails to show or suggest "means for attaching a further part", as is presently recited in amended independent claim 49. For at least this additional reason, the McDonnell patent fails to show or suggest amended independent claim 49.

For at least the foregoing reasons, the McDonnell patent fails to show or suggest amended independent claim 49. Applicants consider it apparent that the McDonnell patent also fails to show or suggest claims 51, 55, 56 and 57 since they all depend from claim 49 and recite additional novel features of the present invention.

The Examiner has withdrawn the indicated allowability of claims 23-35, 38-46 and 48-57 in light of newly discovered reference(s) to the oral translation of WO96/01377.

Rejections Based on the Aeschlimann et al. Reference

The Examiner is now rejecting claims 23-26, 28-30, 33-40, 44-46, 48 under 35 U.S.C. §102(b) as being anticipated by PCT patent publication WO96/01377 to Aeschlimann et al., or in the alternative, under 35 U.S.C. §103(a) as being obvious over the Aeschlimann et al. reference.

The Aeschlimann et al. reference discloses a method of joining two parts, one of which consists of wood or a wood-like material and the other one consists either of wood or of a thermoplastic material. According to the Aeschlimann et, a layer of thermoplastic material is positioned between the two parts to be joined and then the two parts are pressed against each other. A mechanical vibration, such as

ultrasound, is then applied to one of the parts to be joined, thereby liquefying the thermoplastic layer at the interface between the two parts. The two parts become joined upon solidification of the liquefied thermoplastic material. The joining effect produced by the method according to Aeschlimann is somewhat similar to gluing with a hot melt glue or to ultrasonic welding, such as is known for joining together two thermoplastic parts.

In the Aeschlimann et al. reference, the thermoplastic material positioned between the two parts can be: (i.) a layer of a thermoplastic lacquer applied to at least one of two wooden parts to be joined (Fig. 1, thickness 0.1mm according to page 8, line 3), (ii.) a piece of thermoplastic foil positioned between two wooden parts to be joined (Fig. 2, thickness in the range of 30 to 200μm according to page 9, lines 24/25), (iii.) a thermoplastic pin positioned in two corresponding bores of two wooden parts to be joined (Fig. 9 and in more detail and only partly shown in Figs 10 and 11), or (iv.) the thermoplastic surface of a thermoplastic part to be joined to a wooden part (Figs. 3 and 12). The Aeschlimann et al. reference is silent about the depth to which such a thermoplastic surface is liquefied.

The pin-shaped joining element 8 shown in Fig. 9 of the Aeschlimann et al. reference is positioned in two corresponding bores of the two wooden parts to be joined and the ultrasonic vibration is applied to one of the parts. As disclosed on page 16, lines 11-20 and in the paragraph bridging pages 16 and 17, the pin-shaped joining element 8 is conical, having a diameter which is at least locally larger than the diameter of the bores such that it cannot be fully inserted in the bores. By pressure and ultrasonic vibration, the pin-shaped joining element 8 is pressed into the bores and its shape adapts to the form of the bores, whereby the surface of the pin-shaped joining element 8 is joined to the bore walls.

According to Figs. 10 and 11 (which show the pin-shaped joining element 8 of Fig. 9 in more detail), the diameter of the pin-shaped joining element (8.1, 8.2) diminishes stepwise in the direction of the bore depth. On page 17 (last paragraph), the dimension of the steps is indicated as 0.5 mm, the distance between two neighboring steps is 4 mm, the steps form a regular pattern on the circumferential surface of the pin-shaped joining element.

In rejecting claims 23-26, 28-30, 33-40, 44-46 and 48, the Examiner refers to a passage on page 18 of the Aeschlimann et al. reference concerning the penetration of the thermoplastic in the region of the tip of the dowel up to 50mm. The passage referred to by the Examiner is the second paragraph of page 18. A translation of this paragraph is as follows:

> "It shows that for a joining as described in connection with Figs. 9 to 11 {Aeschlimann's pin/bore-joining}, the thermoplastic material of the pin shaped joining element penetrates into the wood up to 50 mm, which leads to locally very strong joints exceeding the inherent strength of the wood. It also shows that the material of the pin shaped joining element penetrates the wood in particular in the area of the distal end of the pin and in particular parallel to the wood grain. If e.g. a pin shaped element is "welded" into a bore in a side face of a wooden part (bore extending perpendicular to the wood grain) the material penetrates the wood in particular in the area of the bore end and in particular in a direction perpendicular to the bore axis, thus creating a good anchorage of the pin like element. It seems that such anchorage also depends on the design of the distal end of the pin shaped element."

Independent Claim 23 and Claims Depending Therefrom

As set forth above, in the Aeschlimann et al. reference, the pin-shaped joining element 8 has a diameter which is at least locally larger than the diameter of the bores such that it cannot be fully inserted in the bores. Thus, the Aeschlimann et al. reference fails to show or suggest (with emphasis added):

> the step of "forming a bore", wherein the bore is "matched to the shape and dimensions of the joining element so that the joining element can be positioned in the bore with substantially no force *and with the distal end of the*

inserted joining element disposed against the inner closed end of the bore", as is presently recited in amended independent claim 23; and

the step of "inserting the joining element in the bore *such that the distal end of the joining element is disposed against the inner closed end of the bore*", as is presently recited in amended independent claim 23

For at least these reasons, the Aeschlimann et al. reference fails to show or suggest amended independent claim 23.

In addition to the foregoing, the Aeschlimann et al. reference fails to disclose the thermoplastic material of the pin-shaped joining element 8 as flowing beyond the closed ends of the bores in the axial direction of the bores. As set forth above, the second paragraph of page 18 of the Aeschlimann reference only describes the thermoplastic material as penetrating the wood in a direction **perpendicular** to the bore axis. Thus, the Aeschlimann et al. reference fails to disclose (with emphasis added): "applying pressure" and "applying vibration energy" so as to cause the "thermoplastic material to flow into pores of the part *beyond the inner closed end of the bore in the axial direction of the bore*", as is presently recited in amended independent claim 23. For at least this additional reason, the Aeschlimann et al. reference fails to show or suggest amended independent claim 23.

For at least the foregoing reasons, Applicant submits that the Aeschlimann et al. reference fails to show or suggest amended independent claim 23. Applicants consider it apparent that the Aeschlimann et al reference also fails to show or suggest claims 26-31, 33 and 34 since they all depend from claim 23 and recite additional novel features of the present invention.

Independent Claim 36

It is clear from Fig. 9 of the Aeschlimann et al. reference that when the two parts (G, H) are joined together, the bore does not have an open end. Thus, the Aeschlimann et al. reference fails to disclose first and second parts defining a bore having "an open outer end in the second part", as is presently recited in amended independent claim 36. For at least this reason, Applicant submits that the Aeschlimann et al. reference fails to show or suggest amended independent claim 36.

Independent Claim 37

As set forth above, it is clear from Fig. 9 of the Aeschlimann et al. reference that when the two parts (G, H) are joined together, the bore does not have an open end. Thus, the Aeschlimann et al. reference fails to disclose first and second parts defining a bore having "an open outer end in the second part", as is presently recited in amended independent claim 37. For at least this reason, Applicant submits that the Aeschlimann et al. reference fails to show or suggest amended independent claim 37.

In addition to the foregoing, the Aeschlimann et al. reference fails to disclose the thermoplastic material of the pin-shaped joining element 8 as flowing beyond the closed ends of the bores in the axial direction of the bores. As set forth above, the second paragraph of page 18 of the Aeschlimann reference only describes the thermoplastic material as penetrating the wood in a direction **perpendicular** to the bore axis. Thus, the Aeschlimann et al. reference fails to disclose (with emphasis added) "a macroscopic anchor area in said first part beyond said closed inner end *in the axial direction of the bore*", wherein "a composite material of the thermoplastic material and the wood in the macroscopic anchor area" is formed, as is presently

recited in amended independent claim 37. For at least this additional reason, Applicant submits that the Aeschlimann et al. reference fails to show or suggest amended independent claim 37.

Independent Claim 48

It is clear from Fig. 9 of the Aeschlimann et al. reference that when the two parts (G, H) are joined together, the bore does not have an open end. Thus, the Aeschlimann et al. reference fails to disclose first and second parts defining a bore having "an open outer end", as is presently recited in amended independent claim 48. For at least this reason, Applicant submits that the Aeschlimann et al. reference fails to show or suggest amended independent claim 48.

Rejections of Dependent Claims 26, 27, 28, 29, 32, 34 Based on the Aeschlimann et al Reference as a Primary Reference and One or More Other Secondary References

Initially, it is noted that claim 32 has been canceled.

The Examiner has rejected claims 26, 27, 28, 29, 32, 34 (which depend from independent claim 23) under 35 U.S.C §103(a), based on combinations of the Aeschlimann et al. reference with one or more of the following references:

U.S. Patent No. 4,761,871 to O'Conner et al.

U.S. Patent No. 4,675,972 to Bappert et al.

U.S. Patent No. 5,308,205 to Lautenschlager

U.S. Patent No. 5,780,536 to Yokoyama et al.

U.S. Patent No. 4,100,954 to Muller et al.

The O'Conner et al patent discloses a method of securing together thermoplastic articles with a thermoplastic nail 52 that may have an enlarged head 54. In accordance with the method, the thermoplastic articles are first heated and then the nail 52 is driven into the articles, while they are hot.

The Bappert et al. patent discloses a method of securing an insulating plate 4 to a structure 8 using a plastic dowel 2, which is comprised of a straddling dowel 12 and a dowel pin 16 having a disk-like head 14. In accordance with the method, a stepped hole 18, 24 is formed in the structure 8 and the insulating plate 4 and then the dowel 2 is driven by force into the hole 18. A collar 44 on the straddling dowel 12 abuts the structure 8 and stops the downward movement of the straddling dowel 12, however, the dowel pin 16 continues to move through the straddling dowel 12. The dowel 2 is not disclosed as being plasticized.

The Lautenschlager patent discloses a plastic retaining peg 10 with fins 20 for fastening a furniture fitting member 12 to a furniture wall 14 having a blind bore 16. The peg 10 is pressed or driven into the bore 16. The peg 10 is not disclosed as being plasticized.

The Yokoyama et al. patent discloses a plastic screw 1 comprising ferrite particles that is conventionally screwed into two plates composed of epoxy resin and then is inductively heated to melt and thereby secure the two plates together. The bore formed in the two plates is not disclosed as having a closed end.

The Muller et al. patent discloses a sleeve 2 filled with a two component adhesive 4. The sleeve 2 is pushed into a hole in, for example, a brick wall. A screw 9 is then threadably driven into the sleeve 2.

As set forth above, the O'Conner et al. patent, the Bapppert et al. patent, the Lautenschlager patent, the Yokoyama et al. patent and the Muller et al. patent each disclose a fastener that is driven into parts to be joined. Accordingly, none of the foregoing patents show or suggest (with emphasis added):

> the step of "forming a bore", wherein the bore is "matched to the shape and dimensions of the joining element so that the joining element can be positioned in the bore with substantially no force *and with the distal end of the inserted joining element disposed against the inner closed end of the bore*", as is presently recited in amended independent claim 23; and
>
> the step of "inserting the joining element in the bore *such that the distal end of the joining element is disposed against the inner closed end of the bore*", as is presently recited in amended independent claim 23

Accordingly, the O'Conner et al. patent, the Bapppert et al. patent, the Lautenschlager patent, the Yokoyama et al. patent and the Muller et al. patent all fail to cure the deficiencies of the Aeschlimann et al. reference with regard to claim 23, from which claims 26, 27, 28, 29 and 34 depend. Thus, for at least this reason, combinations of the Aeschlimann et al. reference with one or more of the O'Conner et al. patent, the Bapppert et al. patent, the Lautenschlager patent, the Yokoyama et al. patent and the Muller et al. patent fail to show or suggest claim 23 and therefore claims 26, 27, 28, 29 and 34.

Rejections of Dependent Claims 37, 38, 39, 40, 43, 44, 45 and 46 Based on the Aeschlimann et al Reference as a Primary Reference and One or More Other Secondary References (Points 16, 17, 18, 20, 21, 22 of Office Action)

Initially, it is noted that claims 38 and 43 have been canceled.

The Examiner has rejected independent claim 37 and dependent claims 38, 39, 40, 43, 44, 45, 46 (which ultimately depend from independent claim 37) under 35 U.S.C §103(a), based on combinations of the Aeschlimann et al. reference with one or more of the following references:

U.S. Patent No. 4,761,871 to O'Conner et al.

U.S. Patent No. 4,675,972 to Bappert et al.

U.S. Patent No. 5,308,205 to Lautenschlager

U.S. Patent No. 5,780,536 to Yokoyama et al.

U.S. Patent No. 5,125,442 to Hendrickson

U.S. Patent No. 3,723,215 to Kessler

U.S. Patent No. 2,510,693 to Green

U.S. Patent No. 772,029 to Clark

U.S. Patent No. 3,481,803 to Hewitt

The O'Conner et al. patent, the Bappert et al. patent, the Lautenschlager patent and the Yokoyama et al. patent are described above.

The Hendrickson patent discloses a fitting 10 composed of plastic for joining two wood components 26, 32. The fitting is not disclosed as being plasticized.

The Kessler patent discloses a dowel-like fastener 29 composed of steel.

The Green patent discloses a plastic fastener, such as a plastic nail 16. The Green patent does not disclose plasticizing the plastic fastener in a bore having a closed end.

The Clark patent discloses a rivet, presumably composed of metal.

The Hewitt patent discloses a plastic fastening member 1 that is used to secure together an article 3 and a thermoplastic sheet 2. The member 1 is threadably driven into the thermoplastic sheet 2, thereby causing a stem portion 1b to melt and a portion of the thermoplastic sheet 2 to melt.

None of the references described above discloses plasticizing a plastic fastener in a bore having a closed end that is formed in a wooden part. Accordingly, none of the foregoing references disclose "a macroscopic anchor area in said first part beyond said closed inner end in the axial direction of the bore", wherein "a composite material of the thermoplastic material and the wood in the macroscopic anchor area" is formed, as is presently recited in amended independent claim 37. Accordingly, the O'Conner et al. patent, the Bapppert et al. patent, the Lautenschlager patent, the Yokoyama et al. patent, the Hendrickson patent, the Kessler patent, the Green patent, the Clark patent and the Hewitt patent all fail to cure the deficiencies of the Aeschlimann et al. reference with regard to claim 37, from which claims 39, 40, 44, 45, 46 depend. Thus, for at least this reason, combinations of the Aeschlimann et al. reference with one or more of the O'Conner et al. patent, the Bapppert et al. patent, the Lautenschlager patent, the Yokoyama et al. patent, the Hendrickson patent, the Kessler patent, the Green patent, the Clark patent and the Hewitt patent fail to show or suggest claim 37 and therefore claims 39, 40, 44, 45 and 46.

Rejection of Claim 46 Based on the McDonnell patent

in view of the Hewitt patent

(Point 24 of Office Action)

The Examiner has rejected claim 46 (which depends from independent claim 37) under 35 U.S.C §103(a), based on the McDonnell patent in view of the Hewitt patent.

As set forth above, the McDonnell patent simply discloses a fastener having a conical portion 2 that is ostensibly formed of PVC. Also as set forth above, the Hewitt patent discloses a plastic fastening member 1 that is used to secure together an article 3 and a thermoplastic sheet 2. Accordingly, neither the McDonnell patent, nor the Hewitt patent disclose "a macroscopic anchor area in said first part beyond said closed inner end in the axial direction of the bore", wherein "a composite material of the thermoplastic material and the wood in the macroscopic anchor area" is formed, as is presently recited in amended independent claim 37. Thus, for at least this reason,the combination of the McDonnell patent with the Hewitt patent fails to show or suggest claim 37 and therefore claim 46.

Rejections of Dependent Claims 51, 52, 53, 54 and 56 Based on the McDonnell Patent as a Primary Reference and One or More Other Secondary References (Points 23, 25, 26, 27 and 28 of the Office Action)

Initially, it is noted that claims 52, 53 and 54 have been canceled.

The Examiner has rejected dependent claims 51, 52, 53, 54 and 56 (which ultimately depend from independent claim 37) under 35 U.S.C §103(a), based on combinations of the McDonnell patent with one or more of the following references:

U.S. Patent No. 5,780,536 to Yokoyama et al.

U.S. Patent No. 5,547,325 to Tucker et al.

U.S. Patent No. 5,308,205 to Lautenschlager

U.S. Patent No. 4,717,302 to Adams et al.

U.S. Patent No. 2,510,693 to Green

U.S. Patent No. 772,029 to Clark

U.S. Patent No. 3,481,803 to Hewitt

Reader's Digest Complete Do-it-yourself Manual

The Simon and Schuster Complete Guide to Home Repair and Maintenance

The Yokoyama et al. patent, the Lautenschlager patent , the Green patent, the Clark patent and the Hewitt patent are described above.

The Tucker et al. patent discloses a continuous nail pack 1 made of plastic material.

The Adams et al. patent discloses a bolt 20 formed from a preform 10 comprising a thermoset resin.

The Readers Digest and the Simon and Schuster references disclose that fasteners, such as screws can be formed of aluminum, stainless steel, etc.

None of the foregoing references disclose a fastener having a tip composed of a thermoplastic material and another portion composed of a different plastic. Therefore, none of the references correct the deficiencies of the McDonnell patent with regard to claim 49. In her rejection of claim 53 (now canceled), the Examiner states: "It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the screw or nail of McDonnell with conventional materials for screw or nail as exemplified by Adams and/or Tucker such as thermosetting materials, only the expected results would be attained." The Examiner, however, provides no reason or motivation to modify the McDonnell patent to have the body of

the fastener composed of a different plastic. MPEP § 2143.01 states (with emphasis added) "A statement that modifications of the prior art to meet the claimed invention would have been '*well within the ordinary skill of the art at the time the claimed was made*' because the references relied upon teach that all apects of the claimed invention were individually known in the art *is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references.*"

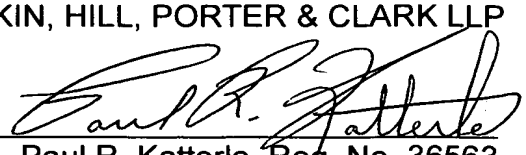
For at least the foregoing reasons, Applicant submits that independent claim 49 and therefore claims 51 and 56 are patentable over the McDonnell patent in combination with one or more of the Yokoyama et al. patent, the Tucker et al. patent, the Lautenschlager patent, the Adams et al. patent, the Green patent, the Clark patent, the Hewitt patent, the Reader's Digest Complete Do-it-yourself Manual and the Simon and Schuster Complete Guide to Home Repair and Maintenance.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge the same to our Deposit Account No. 18-0160, our Order No. FRR-32641.

Respectfully submitted,

RANKIN, HILL, PORTER & CLARK LLP

By 
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